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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,418	02/26/2004	Peter G. Bowles	124-1071	2793
23117	7590	05/09/2006		
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
EXAMINER				
CHUO, TONY SHENG HSIANG				
ART UNIT		PAPER NUMBER		
1746				

DATE MAILED: 05/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/786,418	Applicant(s) BOWLES ET AL.	
	Examiner Tony Chuo	Art Unit 1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/26/04, 2/9/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-15 and 17-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Giwa et al ("Scale-Up of Lithium/Carbon Monofluoride Envelope Cells", Proceedings of the 39th Power Sources Conference, June 2000, pg 32-35). Regarding claim 1, 4, 12, 13, 19, 21, 26, and 27, the Giwa reference teaches a pouch battery and a method of making the pouch battery comprising: a primary lithium/solid cathode cell where the cathode is a carbon monofluoride; an assembly formed by respectively overlaying a sheet cathode, a sheet separator, and a lithium metal sheet anode to form a stacked structure and subjected to 1 to 5 folds wherein the initial fold comprises folding the cathode sheet around a central lithium anode; and forming a pouch battery by sealing the electrode assembly in a Surlyn bag (See Introduction, Experimental, and Cell Construction). Since the cathode sheet was folded around a central lithium anode, the cathode would be folded in half around a double-sided anode sheet so as to surround

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the respective upper and lower active anode surfaces such that the fold line extends perpendicular to its length. Therefore, the anode sheet is half the size of the cathode sheet. Regarding claims 2, 14-15 and 17, it is well known in the art that a double-sided anode comprises a single sheet current collector combined with either a single layer of lithium metal or two layers of lithium metal that form the upper and lower active surfaces to form a single integral anode. Since the anode sheet is half the size of the cathode sheet, the dimensions of the anode current collector match those of the cathode when folded in half. Regarding claims 3, the cathode and separator would have to be the same size and shape in order to prevent an electrical short between the anode and cathode. Regarding claim 5-7 and 22-23, it also teaches folding the cell five times, starting with a sheet that is 240 x 7.5 cm and ending with a folded construction that is 7.5 x 7.5 cm (See Cell Construction). Therefore, four subsequent folds were made upon the same side of the stacked structure with the fold line extending perpendicular to the original length of the stacked structure and its overall length is halved at each fold. Regarding claim 8, it also teaches a battery capacity that exceeds 18 Ah (See Capacity and Energy Density table in Discussion of Results). Regarding claims 9 and 10, it also teaches a cathode that comprises an aluminum sheet current collector and a cathode material layer where the cathode has active surface on only one side thereof, formed by the cathode material layer (See Experimental). Regarding claims 11 and 24, it also teaches total cathode and anode capacities that are roughly matched to produce a balanced cell (See Cell Construction). Regarding claim 18 and 25, it also teaches the cathode capacity/cm² is about half that of the anode capacity/cm² (See Experimental).

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Regarding claim 20, it also teaches an electrolyte filling stage (See Cell Construction).

Regarding claim 28, it also teaches a pouch battery in which the cathode, separator, and anode sheets have been respectively overlaid on one another to form a stacked structure, and the structure has been folded in half so that its length is halved at each fold, each fold being made on the same side of the structure with the fold lines extending perpendicular to the original length (See Experimental and Cell Construction).

Regarding claim 29, it also teaches a primary lithium/solid cathode pouch battery comprising an electrode assembly formed by respectively overlaying a sheet cathode, a sheet separator and a double-sided sheet anode to form a stacked structure, and subjecting the stacked structure to multiple folds, wherein the initial fold comprises folding the cathode in half around the double-sided anode so as to surround the respective upper and lower active anode surfaces thereof, and wherein one or more successive folds comprises folding the stacked structure so its overall length is halved with each fold, the fold lines being made perpendicular to that length (See Introduction, Experimental, and Cell Construction).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Giwa et al ("Scale-Up of Lithium/Carbon Monofluoride Envelope Cells", Proceedings of the 39th Power Sources Conference, June 2000, pg 32-35) in view of Aamodt et al (US 2003/0194604). The Giwa reference is applied to claims 1-15 and 17-29 for reasons stated above. However, the reference does not expressly teach a current collector in the form of a mesh or grid with the lithium foil occupying the openings to form a double sided lithium anode. The Aamodt reference does teach a metal grid that functions as a current collector with lithium foil occupying the openings to form a double side lithium anode (See paragraph [0013]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Giwa battery to include a metal grid current collector in order to stabilize and reinforce the cohesive bond between the lithium foils.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

u 5/5/06



MICHAEL BARR
SUPERVISORY PATENT EXAMINER